

ON THE
RATIONAL ALIMENTATION
OF
THE LABOURING CLASSES. :

BY
CAPT. M. P. WOLFF, F.S.S.,
AUTHOR OF "FOOD FOR THE MILLION," ETC.

WITH AN ALIMENTATION TABLE

LONDON:
W. H. ALLEN & CO., 13, WATERLOO PLACE,
PALL MALL, S.W.

1886

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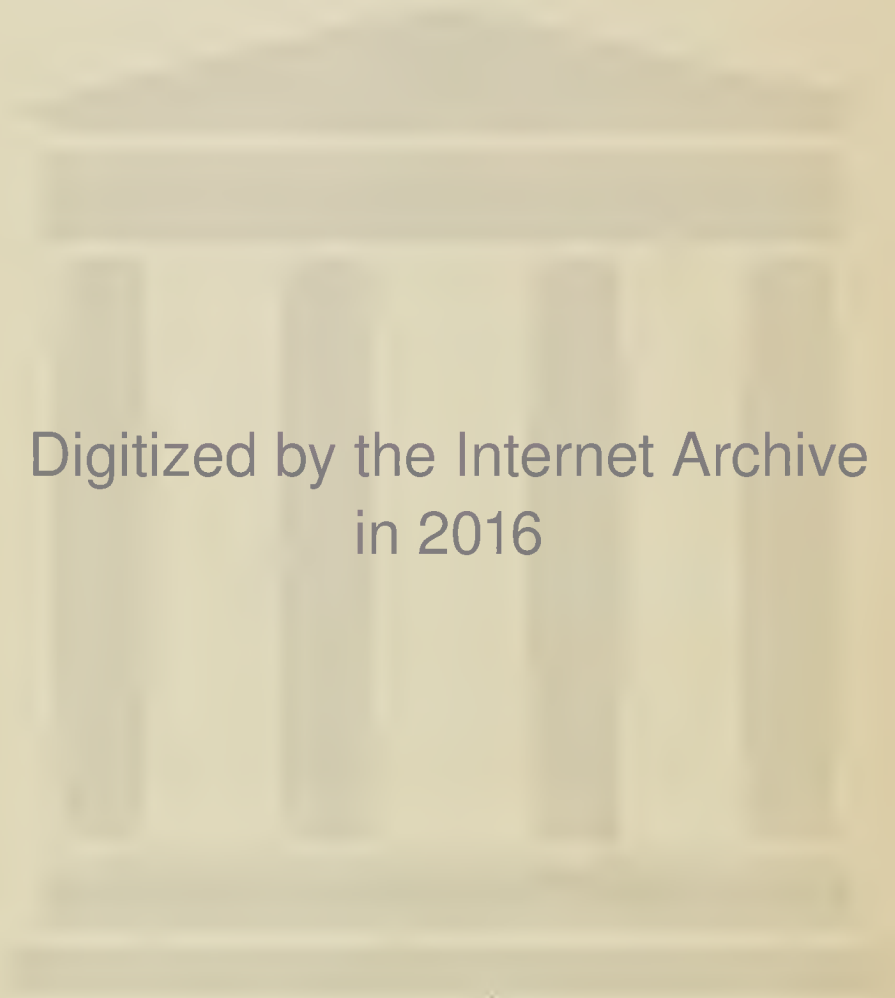
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ON THE
RATIONAL ALIMENTATION
OF
THE LABOURING CLASSES.

A LECTURE

*Given at the Parkes Museum of Hygiene,
74a, Margaret Street, Regent Street, W., on
March 18th, 1886.*

BY

CAPT. M. P. WOLFF, F.S.S.,

AUTHOR OF "FOOD FOR THE MILLION, A PLAN FOR STARTING
PUBLIC KITCHENS," ETC.

DR. B. W. RICHARDSON, LL.D., F.R.S., F.S.A.,
IN THE CHAIR.

(WITH AN ALIMENTATION TABLE.)

LONDON:
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ON THE
RATIONAL ALIMENTATION
OF
THE LABOURING CLASSES.

MR CHAIRMAN, LADIES, AND GENTLEMEN,

“The rational alimentation of the labouring classes” requires a threefold consideration for its exhaustive treatment, viz. :—

I. Of the food daily required by men, of its nourishing contents, and of its price.

II. Of the ways of preparing such food.

III. Of the means of offering it in the cheapest and most convenient ways to the consumers.

I. *On food, its nourishing contents and its price.*

1. With regard to these points, I feel bound to lay before you in the first instance a short

resumé of the results of investigations that for many a year back have been carried on by scientists, in order not only to ascertain the chemical composition of the material which is mostly used by men for their alimentation, but also as to how many nourishing substances, in form of food, people of the different ages and sexes ought daily to consume, in order to keep their bodily and mental strength up to the standard required. These discoveries are of a comparatively recent date; they, moreover, represent, of course, only average statements, since the results given depend in every individual case on the size, temporary health, occupation, social customs, habits, &c. of the consumer in question, and they relate, finally, to the inhabitants of moderate climates only. However, they will allow of very valuable calculations and considerations, and greatly contribute to destroy a good many inveterate prejudices.

But few men only are acquainted with chemistry. I therefore could not think of troubling you here with long strings of out-

landish names of elements, which the eminent English and foreign professors have found to be contained in the articles of daily food. They confuse the uninitiated more than they enlighten him. I have therefore decided to follow here the method adopted by the representatives of the Physiological School of Munich, and particularly that by Professor Dr. I. Koenig, Director of the Royal Agricultro-Chemical Institute at Münster, Westphalia, who, for the sake of making this important matter more intelligible, brought these various elements under only three heads.

The great advantages of such a simplification are, that the results of such investigations can now easily be applied in all such establishments where the masses are to be fed on an extensive scale; and they are, therefore, already acted upon in a great many governmental, municipal, and public kitchens on the continent for several years back.

But I was unable to spare you the trouble of listening to the explanation of these prin-

ciples ; for it is absolutely necessary to master in the first instance the theoretic part of a question, in order thus to gain the proof and standard by which the manifold forms of actual life can be measured and thus be understood.

2. Food contains, in the main, four kinds of nourishing elements, viz. Nitrogenous substances, fat, hydrates of carbon, and mineral salts. These latter, however, are found in sufficient although infinitesimal quantity in almost every article of food, and can for these reasons here be omitted from any further consideration.

The nitrogenous substances are of the greatest importance for the alimentation of the body, since by their means the blood is formed and the tissues and organs of the body are built up. Their intrinsic and their pecuniary value is five times as much as that of hydrates of carbon. One-third of the whole amount of them must, with a grown-up man, be derived from animal origin, *i.e.* flesh, fish, fowl, eggs, milk, butter, cheese, &c., or else the full digestion of the food will be impaired,

or, in other words, the feeding is carried on at a partial loss.

Fat partly settles either under the skin, between the muscles, or in the cavities of the body, and is partly oxydised, *i.e.* burnt with the production of the carbonic acid which is contained in the blood; its intrinsic and pecuniary value is three times higher than that of hydrates of carbon.

Hydrates of carbon (*i.e.* sugar, starch, &c.), are, as a rule, thoroughly burnt; the latest discoveries, however, have shown that, under circumstances, fat can also be produced by them.

The relations of these three substances to each other are best expressed in Professor Koenig's words, thus: "Nitrogenous substances represent the machine, whilst fat and hydrates of carbon form the fuel for keeping it in working order." But it is, furthermore, necessary to state that, although a deficiency of fat and hydrates of carbon can well be made good by a greater consumption of nitrogenous substances (the way which the wealthy classes generally follow), yet a lack of nitro-

genous substances can never fully be replaced by greater quantities of either fat or hydrates of carbon.

In addition to this, it must be known that all articles of purely animal origin contain only nitrogenous substances and fat, whilst vegetables consist generally of all three of the afore-mentioned elements; and, finally, that the prominent contents of dry vegetables, such as pulse, are nitrogenous substances and hydrates of carbon, whilst green vegetables show very little nourishing power, but are mostly composed of water, fibrous substances, ashes, and so on.

3. From these remarks it can readily be understood why it was necessary to base the calculation of the daily consumption of men on the nourishing substances which are contained by food, instead of on the quantity of the material. By way of illustration I beg permission to state that, whilst the prescribed amount of nourishing elements is represented in a man's usual daily fare of tea, bread, butter, cheese, meat, and vegetables, on the

average, by about $3\frac{1}{3}$ lbs., it would require over 6·5 lbs. of potatoes, or over 16·5 lbs. of spinach, daily, should any man be obliged to live on either of these vegetables exclusively, in order to supply him with the combined amount of nourishing elements.

4. In order to facilitate the understanding of these matters I have, following Professor Koenig's example, drawn these three diagrams, towards which I beg to invite herewith your attention. They contain :

(a) The daily requirements of a child under eighteen months, of a youth of from seven to fifteen years of age, of a grown-up man, and a grown-up woman ;

(b) An illustration of how many of the aforesaid nourishing elements are represented by 1 lb. of some kinds of raw material ;

(c) An exemplification of how a man's daily fare should be composed, in order to answer his bodily requirements, provided his earnings allow him to enjoy daily a certain limited quantity of meat ; and

(d) A sample of what the daily fare should

consist in the case that the smallness of his his earnings should disallow him to take meat at all.

As regards the signs used in this diagram : nitrogenous substances are indicated by a dotted line; fat by a waved line; and hydrates of carbon by a straight line. The quantities which are to be derived from animal origin are indicated by the stout line, drawn underneath any of the preceding lines.

All figures you see in the table represent ounces.

The whole drawing is done according to the scale of 1 oz. of contents=1 inch.

5. Before entering now into the particulars of these diagrams, I beg to state that I shall confine myself strictly to only such remarks as relate to the rational alimentation of the masses, and particularly to that of the families of the labouring classes.

(a) As regards children under eighteen months, you can see that almost the whole of their food is to be derived from animal origin; under common circumstances 2·2 lbs. to 2·4 lbs.

of mother's milk, or about the same quantity of best cow milk, are daily required by every infant. But since milk ought to represent a prominent part of the total of the food for children during the next three to four years as well, it becomes evident of what an importance a cheap and unadulterated supply of milk must be for every rising generation.

(*b*) During the rest of the lives of men nourishing elements, which are to be derived from animal origin, are confined to nitrogenous substances only. A grown-up man requires of this kind not more than 1·40 oz. per day, and they can be taken in form of meat, fish, fowl, milk, cheese, &c., as the case may be. But the statement of this fact is of very momentous consequence. For the First Lesson which we can learn from it is that men, as well as nations, who have taken to the habit of consuming larger quantities of meat daily than about $4\frac{1}{3}$ oz., live quite unnecessarily expensively.

(*c*) An equally instructive observation is to be made with respect to the quantity of fat that is daily required. Of this stuff a grown-

up man need not take more than 1·96 oz. a day in order sufficiently to supply the wants of his body. And from the recognition of this fact we may derive the Second Lesson, namely, that the great predilection of the lower classes for richly made-up dishes may well satisfy their tastes, but has nothing to do with the real improvement of their alimentation.

(d) Finally, for the sake of subsequent considerations, I beg to draw your attention towards the proportions between the totals of the nourishing substances which are required by men, women, and youths. They stand thus : when you put the prescribed daily fare of a man = 1, that of a woman is = 0·81, and that of a youth from seven to fifteen years of age = 0·66.

6. In the next place I tried, by means of this diagram, to show how many ounces of nourishing elements of the several kinds every 1 lb. of the raw material enumerated therein comprises. You will find here only fourteen of such articles, whilst Professor Koenig's table comprises more than eighty of them.

But I could not possibly venture to develop before you endless rolls of paper. I had, therefore, to confine myself on the present occasion to the reproduction of only some samples, which had to act as the representatives of articles of kindred nature, and which at the same time could enable me to show you the composition of a two days' fare for a grown-up man.

With respect to these articles, and to such of similar kinds, I beg to draw your attention to the fact that :

(*a*) The prominent representatives of nitrogenous substances are not only the different kinds of meat, fowl, game, and fish, but also cheese, peas, haricot-beans, lentils, flour, oatmeal, rice, and such-like articles ;

(*b*) That butter, oil, dripping, and lard consist almost exclusively of fat ; and

(*c*) That lentils, peas, beans, oatmeal, rice, bread, and the different kinds of flour contain, next to the considerable amount of nitrogenous substances, a still greater supply of hydrates of carbon.

And it is quite particularly this circumstance, which, in searching for the most efficient, and at the same time for the cheapest, mode of the alimentation of the masses, brings these articles to the front row for consideration.

7. Ranging, therefore, the articles which are generally used for food, according to their alimentary efficacy, we find :

(a) That dry vegetables, *i.e.* pulse, occupy conspicuously the first place.

(b) That they are closely followed by the different kinds of corn, and articles manufactured from it, such as flour, bread, pearl-barley, oatmeal, maccaroni, &c.

(c) That cheese takes the next place, followed by

(d) Meat, fish, eggs, &c. ; and

(e) That all fresh vegetables and fresh fruit are mostly composed of water, fibrous substances, and ashes, &c., and are, therefore, of very subordinate value, as far as nourishment goes ; potatoes, however, and dried fruit, show

a pretty considerable amount of hydrates of carbon.

8. But for the composition of a rational daily fare for a working man and his family, there are more considerations required than only those for the bare amount of nourishing elements that are contained by the various articles of food.

(a) Firstly, the price of the fare. The wages of the labouring classes are, on the whole, very limited; and, although, as statistics have it, 58 to 62 per cent. of the combined earnings of a working man's average family are spent on food, yet the sum available for such purposes is in most cases so small that a goodly part of the produce of soil and sea must be excluded from being used for their alimentation.

(b) A further consideration with regard to the price of the material is this: Should a certain stuff A, the nourishing power of which is, say, three times as much as that of the certain stuff B, yet be, say, nine times more expensive than this stuff B, this latter one,

provided all the other circumstances are alike in both cases, is, nevertheless, cheaper and therefore preferable to the stuff A. But, on the other hand, should the quantity of the stuff B, which thus can be purchased three times cheaper than the stuff A, be so bulky as to prevent a man from consuming such a quantity per day as would be required for furnishing his body with the necessary nourishing elements, its advantages are considerably impaired. This is prominently the case with fresh vegetables, and particularly with potatoes.

(c) Again, when a kind of food, say cheese, prominently contains nitrogenous substances and fat, whilst another kind, say pulse or oatmeal, is composed of almost the same amount of nitrogenous substances, of less fat (of which, I beg to remind you, only very little is required by men), but of a very considerable amount of hydrates of carbon in addition, the latter kinds of material are better suited for the alimentation of the masses than the former.

(*d*) Further considerations for composing a daily fare are: that the food provided for be sufficiently filling; that the required quantity of nitrogenous substances from animal origin are duly supplied; that the vegetables of which the meals are prominently to be composed are offered in a form which is moist enough to allow of their being swallowed with ease and satisfaction; that the bill of fare contains, during at least a fortnight, a new dish for dinner every day; that the choice of such dishes must not only have due regard to the particular influence of the cold and hot seasons on the bodily conditions of the consumers, but also to their peculiar predisposition in times of approaching diseases, or after their outbreak; and, last but not least, that the whole of the fare is accommodated, as far as possible, to the special tastes and habits of the consumers for whom it is prepared.

9. From these many considerations you will see that the construction of a lengthy bill of fare, which is satisfactory in every way, is a somewhat troublesome affair. It can, there-

fore, scarcely astonish you to hear that every single item of these conditions can scarcely be wholly fulfilled with every day, and that the highest goal which actually can be reached in managing the alimentation of large masses is that only at the end of every three or four days the minute total of the nourishing elements required during such a period will have come to issue.

For this very reason I did not try to calculate the fares of these two days, as shown in the diagram, to a nicety. I should have given you here only a fancy picture, which in no way would have answered the practical result of life. However, I beg to remark that the small deficiency of nitrogenous substances, which you can see here, will be made good by the consumption of tea, milk, and of the gravy which is to be gained from the bones, and which will be added either to the soups and vegetables, or be issued in form of sauces, and that the superabundance of hydrates of carbon which you find here will be diminished by the peeling, brushing, picking, &c. of the

greater part of the allotted quantity of vegetables.

10. As regards the special composition of these two days' fares, I must admit not to have taken absolute regard to the present taste. The staple food of the working classes in England is represented by tea, meat (should the pecuniary means allow of obtaining it), bread, potatoes, and cheese, but soups, as well as pulse, are utterly disregarded. I am fully confident that with time, and particularly by means of issuing these dishes in a more palatable form than heretofore, this prejudice will be efficiently overcome. But, on the whole, I do not think that, in composing this bill of fare, I have been too regardless of English tastes and habits, and on this very point I beg to make some remarks which seem to me of considerable importance.

It has oftentimes been pointed out how well country people grow in spite of their coarse fare; and this remark was mostly made with the badly veiled suggestion that town-inhabiting working men ought to

take to this cheap mode of alimentation as well.

But the promoters of such allusions are evidently forgetful of the circumstance that such country people mostly enjoy plenty of fresh air and exercise, and, in addition to it, a good supply of cheap and unadulterated milk. Now, a fare which approximately would represent the aggregate amount of the prescribed nourishing substances, would have to consist of 26·25 oz. of bread, 32·00 oz. of potatoes, and 45· oz., or 2·5 pints of milk, or of 6 lbs. 7 oz. of solid and liquid stuff altogether, and its price, when purchased on retail scale, would be, in London, 10·21d. per day per man, or about 2d. more than a man's ordinary fare when purchased from public kitchens.* But although such a fare could be had at a cheaper rate by wholesale production, yet town-inhabiting people would not willingly take to it, but only in cases of

* 1 lb. bread = 1·5d.; 1 lb. potatoes = 0·75d.; 1 qrt. milk = 5d.

utmost emergency. And it is here that their tastes and habits come conspicuously to the foreground. This, however, is not to be wondered at. For, exposed to all kinds of temptations by the rich display of delicacies in the shop-windows, and surrounded by all sorts of luxuries which their wealthier fellow-citizens enjoy, their ideas of comfort in general, and of palatal enjoyments in particular, have, from their earliest youth, acquired a very different stamp from that which distinguishes their less-knowing country cousins, and they will, therefore, look with dismay and disgust on a fare of which these partake daily with satisfaction. Town-folks will, therefore, take to this coarser fare only when under the utmost stress of circumstances, but return to their usual food of meat with vegetables as soon as ever their means will allow them to do so.

This adhesion to the tastes and habits of old cannot astonish anybody who is in any way acquainted with the palatal weaknesses of mankind. For, transplant any wealthy man to a foreign country, and he is sure to provide

himself, as soon as he can, with such dishes, and prepared in exactly the same manner, as he had been accustomed to from his early youth. The Englishman abroad will always look out for his roast beef and mutton chop, and will invariably be disgusted when he finds his choice dishes prepared in a different way than they are served at home. The German will always feast on the recollection of his native "wurst und sauerkraut," and the Frenchman on his "cotelettes en papillots" and his "absynth," and so on. This fact, however, tells a tale of its own, namely, that the palates of men are influenced by strength of habit in exactly the same manner as their brains are by particular work. And just as the educated man is accustomed to, and fond of, a variety of intellectual occupation, so bears his palate, so to speak, a more international character, whilst his less thriving fellow-citizen is as limited in his mental enjoyments, as his longings for gastronomical pleasures extend themselves over only a small number of choice dishes.

This consideration, however, is no idle talk. For the facts mentioned embody the Third Lesson, viz. that those who, one day to come, will undertake the improved alimentation of our labouring classes, must restrict themselves at the beginning to the issue of only such fare, as is thoroughly congenial to the customers. To introduce reforms on this field can only be executed later on, slowly and with utmost discretion. For it is only the coming race which will be able to appreciate this side of the alimentary reform to its full extent.

11. In returning to the single items of this diagram, I beg to state that I omitted on purpose to introduce tea, sugar, milk, onions, parsley, salt, spices, and similar condiments, since the quantities required for a man's daily fare are so trifling, that to lay down their nourishing contents on this paper would have been a trouble without success, as you scarcely would have been able to perceive the tiny coloured stripes, which would have been meant for representing them. But from such mate-

rial as I have shown you here, you will see that I composed the fare of the first day of 26·25 oz. of bread, 1·09 oz. of butter, 1·75 oz. of cheese, which constituted the daily not varying food, and of 4·38 oz. of beef with 17·50 oz. of potatoes for dinner, and a pea-soup made of 2·19 oz. of peas, with 0·35 oz. of lard, for supper, or 3 lbs. 5·51 oz. of solid stuff altogether.

The second day's fare contains the same amount of bread, butter, and cheese, but 4·38 oz. of pork with lentils-pudding, made of 4·38 oz. of lentils and 0·70 oz. of lard, for dinner; and 17·50 oz. of potatoes for supper, showing a total of 3 lbs. 8·05 oz. of solid stuff for this day.

In this way I composed some time ago a weekly bill of fare, which contained in the forms of varying food, besides the dinners and suppers mentioned before, liver and potatoes, sausages and lentils-pudding, mutton and potatoes, fish with potatoes, and salted beef with potatoes, for dinners; and, alternately, soups and potatoes for suppers.

12. Having thus composed a man's weekly fare, I proceeded to calculate that of a woman and that of the average four children, according to the proportions their wants of food stand to those of a man, putting at this occasion the requirements of the average four children = 2·5 youths of from seven to fifteen years of age—in order to state the weekly expenditure on such sufficient and sufficiently nourishing food of an *average working man's family*. I found that such a family would require 12 lbs. 2 oz. per day, or about 85 lbs. of solid stuff per week, and that its cost would be, when taken from public kitchens, about 16s. 6d. per week, viz. for the husband 4s. 9·25d., for the wife 3s. 10·50d., and for the average four children 7s. 9·75d.; or, per day, for the husband 8·18d., for the wife 6·65d., and for the average four children 13·39d. However, I must warn you not to expect such good results from only one or two kitchens hastily started in some forlorn corner of the town, and issuing not more than only a few hundreds of portions per day. The prices for the raw material introduced in this

calculation are such as can only be obtained at the central markets by really wholesale transactions, and the daily issue must, furthermore, in every kitchen amount to the aggregate quantity of the fares of 2,000 men a day, in order to allow of such a low selling price.

From this statement, however, we must derive the Fourth Lesson. It is this. Our working population must be assisted to leave this most pernicious way of gathering the ingredients of their daily meals from the retail markets. The generally-acknowledged advantages which arise from purchasing the raw material at wholesale scale and at wholesale prices, and from transforming it into manufactured goods by means of well-devised division of labour and powerful machines, must at last be opened to them. But this cannot possibly be done otherwise than by starting public kitchens on a large scale and in sufficient numbers.

13. I have mentioned just now that a working man's average family would have to spend about 16s. 6d. a week for such sufficient and

sufficiently nourishing food, as shown in the diagram. But in order to understand the significance of this item to its full extent, it is necessary to know what the weekly earnings of such a family must amount to in order to allow of such an outlay on their food.

According to firmly-established statistics, working men's families spend on the average 60 per cent. of their combined earnings on food. When, therefore, 16s. 6d. represents such 60 per cent., 11s. per week would be the remaining 40 per cent., which are required for covering the rest of the necessaries, such as rent, rates and taxes, clothing, fuel, light, medical treatment, education, recreation, locomotion, insurance, &c., so that the combined earnings of the members of the family would have to amount to 27s. 6d. a week, or £71 a year.

But how many heads of the families of the labouring classes do really earn 28s. per week? It is, on the whole, the skilled labourer, the mechanic only, who enjoys such, and higher, wages; whilst the large army of navvies, com-

mon labourers, tenders, porters, messengers, railway-guards, shunters, signalmen, carmen, conductors of 'busses and tramcars, letter-carriers, office-clerks, and so on, and the equally great number of from-hand-to-mouth-living population of no standing occupation, such as street vendors, hawkers, jacks-of-all-trades, &c., are far from earning such a sum.

This, however, teaches us the Fifth Lesson, viz. that, according to the present state of our social development, the greater part of the working men's families must resort to female and juvenile labour, in order to swell the family budget to the amount required, and that, therefore, the housewives can bestow little or no care at all on the preparation of the food for the family.

But in spite of the mothers' and children's exertions for gaining, there will still be left an alarmingly great number of families where the combined earnings will remain beneath the 28s. per week !

14. It will, therefore, be one of the main considerations of the managing directors of

such Public Kitchen Companies to offer their customers not only a sufficient quantity of what I may style "regulation fare," but also a good supply of what you may call "emergency fare" for such people as are unable to purchase the more expensive kind of food. Pulse, rice, maize, tapioca, oatmeal, and other kinds of farinaceous stuff, well prepared with stock and fat, or potatoes in various forms, and offered, either separately or in combination with hearts, heads, lights, or tripe, will have to form the chief ingredients of such "emergency fare."

As a kind of prototype of this sort of alimentation, I have constructed such a fare for a man, as you can see here, which, although not fully answering the single items of the required nourishing contents, shows, nevertheless, in the end the necessary total.

This fare consists of tea with milk and sugar, 26·25 oz. of bread, and 3·50 oz. of cheese, as not varying food, whilst porridge, made from 5·00 oz. of oatmeal, with 0·35 oz. of lard for dinner, and 17·50 oz. of potatoes

for supper, would constitute the daily varying food. The raw material of this fare weighs 3 lbs. 4·60 oz., and the total of the nourishing substances represented by it is about 25·50 oz., *i.e.* about 2 oz. in excess of the “regulation” fare. But it must be borne in mind that in this case the nitrogenous substances from animal origin are deficient of nearly $\frac{1}{2}$ oz., and that, therefore, a larger amount of hydrates of carbon had to be provided for.

The weekly expenditure on such food for a family would amount to about 14s. 1·75d., or to 2s. 0·25d. per day, viz. for the husband 7d., for the wife 5·75d., and for the average four children 11·50d., and the difference of the price between the regulation and the emergency fare would be about 2s. 4d. per week. However, the aggregate weekly earnings of a working man’s family must still amount to 23s. 6d. in order to allow of the purchase of even such an “emergency fare,” which, I beg to remind you, can only then be had at the prices mentioned before when issued by public kitchens !

It is a severe lesson, this Sixth, which we have to learn from these figures, namely :—

(a) That an average working-man's family, even when gaining by their combined and utmost exertions these 23s. 6d. a week, must yet deny themselves meat and butter, in order to live approachingly according to their bodily requirements ;

(b) That all those who are earning less are more or less subjected to semi-starvation, unless they deny themselves one or more of the other necessities, and suffer thus in other ways ; and finally

(c) That, up to the present, even higher earnings than 23s. 6d. a week must have been, and are still, required for the purchase of even such " emergency " fare by the retail transactions with bakers and grocers.

And the Seventh Lesson we have to derive from the same figures is this : that working-men should be again and again most earnestly warned not to marry too early ! 8·25d. a day for " regulation " fare, or 7d. a day for " emergency " fare, is so low a sum, that under

ordinary circumstances most men will be able to spare it from their wages; nay, that they may thus be enabled also to save considerably for their future state of married life. But, without having done so in time, they must find out, too late, that with the increasing family the expenses of the household grow quite out of proportion to their earnings, and that the housewife will only in exceptional cases be able to make up for this growing deficiency by her own industry.

But, however well meant this advice may be, you cannot possibly prevent labouring people from marrying too early, and thus having many children to be nourished. The discrepancy between their earnings and their least acknowledged requirements will, therefore, — never wholly be removed. For this very reason, it is the families of our labouring classes who in the first line deserve support, by offering them sufficient and cheap food; for the neglect of this duty must unavoidably tell seriously not only on the labouring capacity, on the health and happiness of

the elders, but, alas ! at an ever-increasing rate on the bodily and mental effieacy of every rising generation ! This is the Eighth Lesson we have to keep in our minds.

And since this fact has painfully been revealed to me by my studies of the eultural and soeiological development of mankind, I have tried with the best of my forces to draw the attention of " Soeiety " towards the means of remedying this most eryl原因 of all soeial evils !

15. Additional advantages, aeeruing from offering such "emergeney fare," will be these: that many families, whose heads, eonsequent upon their partieularly heavy work, are obliged to feed well in order to keep their strength at the level required, eould be able to partake of the regulation fare, whilst the rest of the family eould live on the less expensive food ; and, finally, that the very praiseworthy movement for supplying indigent school-ehildren with cheap dinners eould be kept eontinuing, without imposing on their promoters any further trouble of eooking for their *protégés*. The publie kitchen of the district eould prepare

them cheaper, and perhaps better, than was heretofore the case, and the kettles, with the number of portions required, could daily be fetched thence to the places of distribution.

In a similar manner could factories, or any establishment where a large number of working men have found their standing occupation, be offered the occasion of feeding their "hands" cheaply and satisfactorily.

16. Before finishing this part of the lecture, I beg leave for adding now still a few remarks on the savings that could be effected by the customers who would choose to purchase their daily food from public kitchens.

I have followed with interest for a long time the retail prices of the common food-stuff, and calculated some time ago what the same weekly regulation fare would cost, should its single ingredients be purchased from the different purveyors of the families by way of retail transaction. I found that, including the expenses for coals, such a regulation fare would weekly amount to 22s. 2·25d., as against 16s. 6d., which, as I mentioned before,

would be about the price in public kitchens. The savings of an average family would therefore amount to 5s. 8·25d. a week, or to about £14 a year; whilst those of the customers of each kitchen district—provided that the full regulation fare of 2,000 men, or their equivalents, would daily be bought from the windows—would amount to about £8,700 a year. However, this latter calculation, I readily admit, is somewhat fictitious, because there will scarcely be one single district in the whole of London where regulation fare exclusively will be asked for; on the contrary, I believe that on the average the sale of such fare will amount to only 50 to 60 per cent., whilst the rest of the demand will be made for the cheaper food. Nevertheless, I am sure you will agree with me that some thousands of pounds yearly can certainly thus be saved in every kitchen district.

17. Under the head of the advantages that will accrue from this new method of alimentation, I beg finally to draw you attention towards the benefits which can be bestowed on the

English meat, corn, and vegetable grower, by opening him a market, at which he will be able to obtain for his produce better prices than he has, up to the present, received at the general markets. We have heard, of late, so many outcries against oppression and extortion, which is said to have been going on at these places, that it appears most desirable to bring help to those sufferers as well; and by the direct dealings between the producers and the public kitchen companies, all parties could gain, including the farmers' worthy help-mate: the agricultural labourer.

Still more could they be benefited by raising a discreet import duty on food stuff. I am fully aware of the fact that this idea is exceedingly unpopular with English people, who are afraid that by this means the "poor man's loaf" may become still more expensive than it already is. This objection, however, would become meaningless, should, as soon as the sufficient number of public kitchens be started, this duty be restituted. Protection could thus be afforded to our agricultural popu-

lation, without in any way imposing a new tax on the town-inhabiting working-men.

II. *On the ways of preparing the food.*

1. In close connection with the disclosure of the chemical composition of the different kinds of material for food, and with those of the daily requirements of the bodies of men, the cooking has of late undergone also the refining development from rough work into science and art.

The manual procedure of it has been for untold centuries more or less the same, whether the cook belonged to a savage tribe or a civilized nation. It was this. The stuff, buried some way or the other into a vessel of more or less simple construction, was exposed to the heat of the fire, in order to become digestible and palatable. When the contents boiled over and filled the kitchen with disagreeable odours, it was considered necessary to remove the vessel to the further end of the hearth-plate; and it was only with some peculiar kinds of stuff, such as milk, that one did

not dare to let it run through this ordeal, because it was known that the produce of such an inconsiderate manipulation would readily bear witness of it by taste or smell.

2. It is also only of late that the initiated began thinking how to leave this rude way of working at the raw material unmercifully.

The scientific suggestions and practical trials made in this direction gained, however, a surer footing as soon as it was discovered in which way the different nourishing elements contained in food ought to be treated. By lengthy experiments it had been recognized that nitrogenous substances, which were of animal origin, should not be exposed to a greater heat than 167 to 176 degrees Fahrenheit, because, otherwise, they invariably coagulated and became thus indigestible; that fat, when treated in air-tight kettles, could bear boiling-heat without being decomposed; and that articles which prominently contained hydrates of carbon required either a low degree of heat for a long time (over-night), or boiling heat for several hours only, in order to make

the fine husks surrounding the single molecules burst and yield a greater volume of cooked stuff, which thus at the same time allowed of a more efficient digestion.

3. From the moment that this knowledge had been gained, it was understood that exposing the sides of the kettle to the direct touch of an open flame or that of steam, which meanwhile had been introduced as an improvement of old things, was out of the question, because of their conveying an unnecessarily great, uncontrollable, and therefore in most cases nocuous amount of heat.

For it had been shown by the experiments of daily life that by such a course the outer parts of the contents of large kettles had already been brought to boiling, and were already in the danger of being burnt, whilst the centre parts remained still far from being sufficiently heated. Stirring the contents frequently had, therefore, to be resorted to, and by so doing whole clouds of damp escaped into the kitchen, rendering it thus malodorous and misty. And by this way the finest of the

aromatic particles which the stuff contained were permitted to escape as well, certainly much to the disadvantage of the dishes in course of preparation.

Finally, the considerations for saving fuel ; for reducing the waste which invariably is connected with the boiling of meat ; for fully developing the nourishing power of stuff like pulse and potatoes, &c., by treating it in the way mentioned above ; and also for evading the vexatious eradiations of the heat, emanating from the cooking-machines of old : I say all these considerations strongly invited the inventive power of men for the construction of a more suitable cooking-machine than there ever had been in use before.

4. This task has most happily been solved, a few years ago, by Captain C. Becker, whose invention has been awarded the Gold Medal at the Hygienic Exhibition in Berlin, 1883. It has since that time been largely introduced in governmental, municipal, military, hospital, prison, and public kitchens in Germany, Austria, and Sweden, and is not unlikely to be

adopted in Spain as well, where, according to my latest information, an intense interest for the rational alimentation of the labouring classes has been aroused by the leading men of that country.

I beg to explain to you with a few words its particular features.

Captain Becker's apparatus is a large oblong box of sheet-iron, divided into three compartments of different sizes, which contain, altogether, four large and several small kettles. These are placed into water, which reaches up to about four inches beneath their edges, where it is covered with an iron hearth-plate. From the small steam-originator—which, as a rule, is placed outside the kitchen—three steam-pipes, fitted with separate valves, lead severally into the three compartments. When cooking is to commence, the kettles are filled, and shut by separate covers; the hearth-plate is flooded, by means of a separate pipe, with water, so that the edges of the inner covers dip, by about $1\frac{1}{2}$ inches, into it. The contents of the kettles are thus shut up from the atmo-

spheric influence, and, *per contra*, no damp can escape. Then the outer cover is lowered, one, two, or all the three valves, as the case may be, are opened, and the steam is thus allowed to enter and to heat the water which surrounds the kettles. Corresponding with each of the three compartments, three thermometers are fixed, outside, to the machine, which indicate the slowly-increasing heat. When such a point is reached as is exactly required by the chemical nature of the contents of the kettles, the valves are shut, and the apparatus is left all to itself, until a short time before the material is cooked, when such condiments are added as are better thrown into the kettles, before the issue of the food takes place. This shows that the handling of the machine is very simple, and that its contents are prevented from boiling over and from being burnt. But it is also dangerless, since, in case of over-pressure of steam from whatsoever cause, a separate pipe allows the self-acting discharge of it. A special advantage of this apparatus is furthermore this, that it keeps the

heat of the water astonishingly well, since it is insulated by thick layers of cork, which are placed severally between the iron sheets of the outer walls. Consequently, whilst on the one hand the surface of it remains perfectly cool during the whole of the cooking process, the loss of heat during the night amounts, on the other hand, to only 18 degrees Fahr., so that the next morning it can be used again after only fifteen minutes' application of fresh steam. The saving of fuel is, therefore, very considerable, and will, for working a machine of 700 full portions of breakfasts, dinners, and suppers each time, require altogether only about 1 cwt. of coal per day.

5. I am unable to enter into further details, but from those I have mentioned up to now you will certainly have perceived that this apparatus, as far as boiling and stewing goes, must be superior to any other, the construction of which is not specially adapted to the chemical particularities of the different kinds of food. And as boiling and stewing will be the main work in the future rational alimenta-

tion of the masses, since the other ways of making the material digestible and palatable involve, more or less, greater waste than does stewing and boiling, I considered it my duty to give you here at least the main features of this remarkable invention.

6. The further appliances, with which every public kitchen must be provided, are for baking, frying, and roasting purposes. Here, however, the use of gas, which has been largely introduced of late, has constituted a very noteworthy progress, so that, if you review the whole of the machines for the preparation of food, you may well say, that there is no lack of most ingeniously devised appliances brought into the field ; only—and I beg to lay special stress on this circumstance—they are of no use at all for any single family, because their mere *raison d'être* is based on the production of large quantities at a time, on the thorough knowledge of the chemical composition of the different kinds of raw material, and on careful attendance.

But neither of these three absolutely ne-

cessary premises can ever be expected to be found in a single working-man's family. And the recognition of this undeniable impotence we must consider the Ninth Lesson.

On the cheapest and most convenient ways of offering cooked food to the consumers.

1. Ladies and Gentlemen,—When I had the honour of lecturing in June 1883 at the Exhibition Hall of the National Health Society on this subject, and then ventured to recommend that the preparation of the daily food for town-inhabiting working people should be raised from the deplorable state of domestic insufficiency to the broad platform of public enterprise, there was only a small number of far-sighted and well-wishing men and women who unreservedly approved of my plans at once, because they were intimately acquainted with the shortcomings, the struggles, and the sufferings of our working population. The public at large, although generally admitting that “something ought to be done,” shrank back from such an unheard-of idea as cooking

for those scores of thousands of single individuals and families in public kitchens.

However, not only the little pamphlet, reproducing my lecture, but still more my book, "Food for the Million, a Plan for starting Public Kitchens,"* and its German translation,† which were published in 1884 and 1885 respectively, met with the kindest reception on the part of the London and provincial, the Swiss, French, and German press, who, from the very beginning and without exception, eloquently advocated the execution of my plans. I, therefore, take here, with special pleasure, the occasion of tendering my sincerest thanks for their kind and invaluable support. For, in this way, the general public was set a-thinking earnestly by what means things could be improved at last. For the greater part of the cogent reasons which I had brought into the field for proving the necessity of the new era in the alimentation of our working-men's

* Sampson Low, Marston, Searle, and Rivington. Crown Buildings, Fleet Street, London.

† Julius Springer, Berlin.

families were too evident, too crying, to be denied or neglected any longer.

Meanwhile time wore on, until the *Times* published, in August 1884, a most interesting article on the "Peoples' Kitchens," which had just been started by Mr. L. O. Smith, the "ex Brandy King" in Sweden. At about the same time the "Cheap Supply of Cooked Food Company," promoted by Sir Edward Sullivan, started a kitchen in Emmeret Street, West India Docks, and so did the "Restaurant Company" at Gateshead-on-Tyne. But the greater part of the public interest had, meanwhile, been absorbed by the enterprise of providing penny dinners for school children on a self-supporting basis, and excellent work has been done in this direction. My book, and still more its flattering reviews, brought, in addition, a great many letters of inquiry from all corners of England, subsequently from Lyons, Rouen, and Paris, at the end of the year 1885 from Madrid as well, and I received at about the same time notice that at Bâle a public kitchen was in the course of being

started at the expense of one hundred thousand francs.

It was not my intention to give you here an exhaustive review of all that has been done in the line of cooking cheaply for certain classes of working people. Here as well as on the continent there are scores of large firms who dine their workers well and inexpensively ; there are coffee- and cheap eating-houses, soup- and peoples' kitchens (especially in Germany, where millions of portions are yearly sold to the general public), but the produce of their work benefited more or less single people exclusively. Much good work has been done in this line for years, but it did not take in the least regard of the wants of the labouring families. The conception of revolutionising and improving by these means the alimentation of the whole of the labouring classes, was conspicuous by its absence.

I have, therefore, confined myself here only to the enumeration of such undertakings as appeared to be an unmistakable manifestation of the growing understanding of this question.

And, as such, I have to point out the following instances as well.

In December last a new impulse to the solution of this all-important question was given here in London by Mr. Henry Roberts, from the firm of Bertram and Roberts, who, in imitation of an old Parisian custom, strongly recommended to utilise such remainders of dishes as have been left by the customers of large restaurants, hotels, and such like establishments for the cheap alimentation of the poor.

This proposal is, no doubt, a sensible one, for I cannot see the reason for wasting such food when thousands of destitute people remain all the year round in a state of semi-starvation. But it is no inviting fare for the broad class of working men proper, who certainly will not take to such a "somewhat suspicious" fare. They will decidedly prefer to draw it from public kitchens, where a guarantee can be had that the material had not been tampered with in any way before it was issued.

This opinion has been unmistakably although indirectly, pronounced by a meeting of working men, which was held under the presidency of Dr. B. W. Richardson, our much honoured Chairman, at the City and Colonial Club, on February 12th, and where the following resolution has been unanimously adopted:—

“That in the opinion of this meeting the most practical mode of developing the best system of supplying cheap dinners and other meals for the people ought to include the establishment of public kitchens and depôts, at which the dinners and the meals can be partaken, and from which they can be supplied to workshops, factories, and private houses. That such a system, supported by the general and influential public, would be immediately popular, and that the Chairman be requested to communicate this view of working men themselves to the leading organs of public opinion.”

Consequent upon this loud and unmistakable appeal on the part of those mostly concerned in the question, it can well be hoped

that their wishes will be fulfilled, and thus the new era of the alimentation of our labouring classes be inaugurated at last !

2. Ladies and Gentlemen, I felt obliged to give you here the short history of the recent development of an idea, which undoubtedly is of the utmost significance for the peaceful solution of one side of the all-important social question. I sincerely hope you will not accuse me of unduly boasting when I ventured to point out the small part which I had the privilege of contributing towards its simplification. But I felt obliged to do so, not only in order to show you what here and on the Continent already has been done, but also in order to connect with the further realization of this plan a few words of advice and warning.

3. I cannot possibly recite here the contents of my book. There I have enumerated, at great length, not only the cogent reasons for, and the advantages of, the realization of this new system of alimentation, but I also dwelt there on the conditions of its success, its

organization, and so on, and I gave, in addition, calculations based on official statistics, from which it could be learnt as well that such an enterprise would pay well the capital invested, without unduly burdening the consumer. From the many reviews published in most of the popular periodicals, I venture, therefore, to suggest that you will not be quite unfamiliar with its general contents.

4. But I beg to touch here in the first line on a remark which I heard not unfrequently, and have even read in some of the reviews, namely, that by starting such central places of alimentation the innate homely feeling which so prominently distinguishes English working families would be impaired. Curious to say, this self-same remark has quite recently been proffered by a German reviewer with regard to the labouring families in Germany.

But is that statement not somewhat exaggerated? Let us see.

The labouring families consist, in the main, of three different classes, viz. such of the artisans and mechanics, of the unskilled workers,

and of the partial or total invalids of labour. But, howsoever comfortable or filthy their abodes may be, I venture to opine that the absence of the mess which is unavoidably connected with cooking will make them appear only more cheerful. The meaning of the objection recorded cannot, therefore, well run in this line. It must rather tend to the meaning that a loving and skilful wife would thus be prevented from gratifying her husband with such dishes as he is particularly fond of.

This is a link in the domestic life which certainly is very powerful, and which I am far from under-valuing. But, *per contra*, it ought to be considered, firstly, that in by far the majority of cases of the daily life such kind regards are only conspicuous by their total absence, and that, secondly, in many other cases the heavy pressure of outdoor work will disallow the housewives of giving way to such tender feelings. Finally, choice dishes cannot every day be served out, even by the most loving of women, and that, by offering the daily fare in public kitchens, such kind-hearted

people are in nowise deprived of occasionally taking a hand in preparing such an extra dish. On the contrary, they will be enabled to do so more frequently than heretofore, consequent upon the greater savings they have effected by taking the regular fare during the week from public kitchens. Nay, I go still farther. I venture to opine that the new method of alimentation will contribute to favour this homely feeling; for the overburdened housewife will thus easier find time for tidying and airing the room, for keeping the children clean and their garments mended, and for preparing the dinner-table in an inviting manner, so that the fare, fetched from the next public kitchen, carefully prepared, savoury, and steaming hot, will be consumed with a greater feeling of comfort and homeliness than this can ever have been the case in thousands of families heretofore.

I, therefore, am utterly unable to imagine how the dreaded effect could ever be produced.

So far for the customers.

5. The next remark relates to the establishments themselves.

Any company who is going to start such kitchens ought not to scatter them aimlessly all over the town, but to undertake from the very beginning the thorough provisioning of one, two, or more districts only, meting out at the same time for every establishment a sufficiently large working field. One such example, and its success will in a short time provoke enterprise to spring up on neighbouring fields, and thus secure the sufficient supply of cooked food in all such parts of every town as are in need of it. For this very reason, and in order to form by myself an approximately correct idea of the number of kitchens required, I have reconnoitred systematically nearly four-fifths of London. Thus I was enabled to ascertain also the most convenient places for establishing them, and the main character of the inhabitants of the different districts as well.

Every kitchen ought to be the centre of the alimentation of its district, and, besides such food as I have pointed out previously, only

milk and coals in the winter, and milk and fruit in the summer, ought to be offered for sale. It would be a mistake to split the exertions for improvement into too many minor enterprises. But you cannot, in building your kitchens, hope to follow a uniform plan throughout, neither with regard to their forms and spaces, nor with respect to the kinds of food to be issued. For, in the one case you depend on the locality, on the size, and consequently on the price of the building-ground you are able to acquire ; in the latter instance, on the character and the means of your customers. All of these circumstances must be of momentous influence on your decisions. On these points, furthermore, depends the size of the district you mete out for every single kitchen. — But, starting them on a much-frequented thoroughfare, with a sufficiently large field for operating in the back ; easy access to the windows, whence the food is to be issued for home consumption ; considerations for the expeditious distribution of the same ; anxious regards for the genuineness of the raw

material, its careful preparation, cleanliness throughout the establishment, a homely aspect of the dining-rooms, and moderate prices for the fare offered, ought invariably to constitute the main features of every public kitchen.

6. The word of advice I venture to offer the companies is this : Do not start your business on a small footing ! Consider that there are things in the world which are doomed to failure unless they are undertaken with sufficient capital, a bold hand, a keen intellect, and a thorough understanding of the wants of the time. And as your enterprise can pay you only by imposing very small profits on the very small quantities issued, the total of this issue must be considerable, or else there will be no profits forthcoming. You, therefore, cannot avoid opening on a large scale. Furthermore, do not forget that the means of your customers are limited, and their tastes peculiar. And when I spoke in the first part of this lecture at great length of "regulation" and "emergency" fares, be well aware of the fact that a good many of your customers will

not dream of following such a regular course, and that they will rather partake of one good meal per day of meat and vegetables, thus leaving it to chance how to satisfy themselves during the rest of the time, than to feed on "emergency" fare ever so filling. You must also offer the public half portions for dinners, and thus open to them every possible chance to get something for even the smallest trifle—for many of them will be very, very poor!

Thus you will contribute in your way to the happy solution of the national side of the question.

For national, and to some degree international as well, it is, and in the most eminent sense of the word.

In my book I have pointed out at considerable length the economical, hygienic, moral, social, and human value which the execution of this new method of alimentation must possess for the labouring classes. But in our days of depression of trade, and all the horrible misery which has been produced by an industrial stagnation that in the end must

cause a reduction of wages all along the front of national labour, its speedy execution is of utmost significance for the whole of the nation. For, it is not alone necessary to open to the general public certain central places, whence the alimention of the needy unemployed can be carried out in a rational manner by way of charity; it is of by far higher importance to offer those who still do earn wages the means of nourishing themselves satisfactorily and cheaply, and to save them thus from the obligation of paying for their food at quite perniciously high rates. “ Prevention is better than cure ! ”

7. And when this plan will have been executed at last, English labour will then again be able efficiently to compete in the world-market, without having reduced their working crafts to a million-headed monster with emaciated body and a mind mad with discontent !

8. Ladies and Gentlemen,—Three years ago I finished my first lecture in this country with the bold prophecy that ten years thence town people would look on the domestic cookery of our labouring classes with the

same feeling of wonder and disgust as we do now-a-days on all the odd home-work of baking, brewing, soap-boiling, and candle-making that our great-grandmothers have been in the habit of performing all their lives long ! For, I was fully convinced that as soon as only one nation will have given way to the burning urgency of changing the old for the new manner of alimentation of our labouring classes, every other nation throughout the civilized world would be compelled to follow suit.

I have not changed my conviction since. The idea has taken root, its realisation has begun, slowly but steadily, to be effected, and it is sure to be carried out ere long.

For never has egotistic shortsightedness been able to stop the restless progress and gigantic development of mankind towards the good and the better !



ALIMENTATION TABLE (SAMPLE).

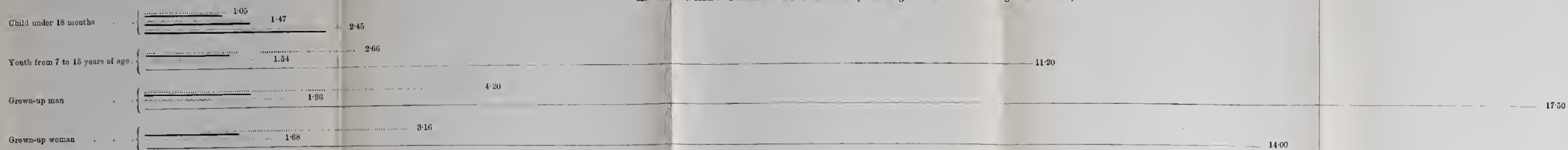
Nitrogenous substances are indicated by a dotted line, thus
 Fatty matter by a waved line, thus
 Hydrates of carbon by a thin straight line, thus

[The lines representing the four smallest quantities (0.006 and under) have been slightly exaggerated on account of their extreme minuteness; but the others are in exact proportion.]

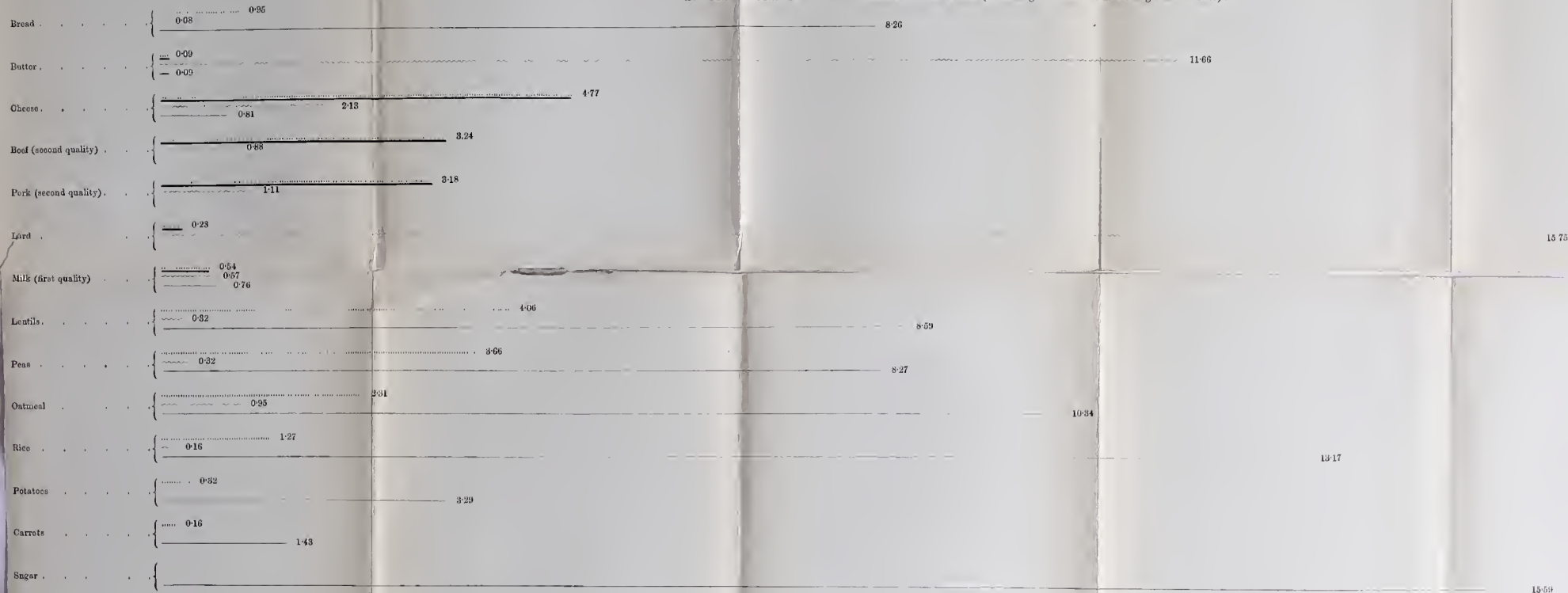
The quantities of these substances which should have an animal origin are indicated by a stout line drawn under any of the preceding lines, thus

[SCALE:—1 ounce of contents=1 inch.]

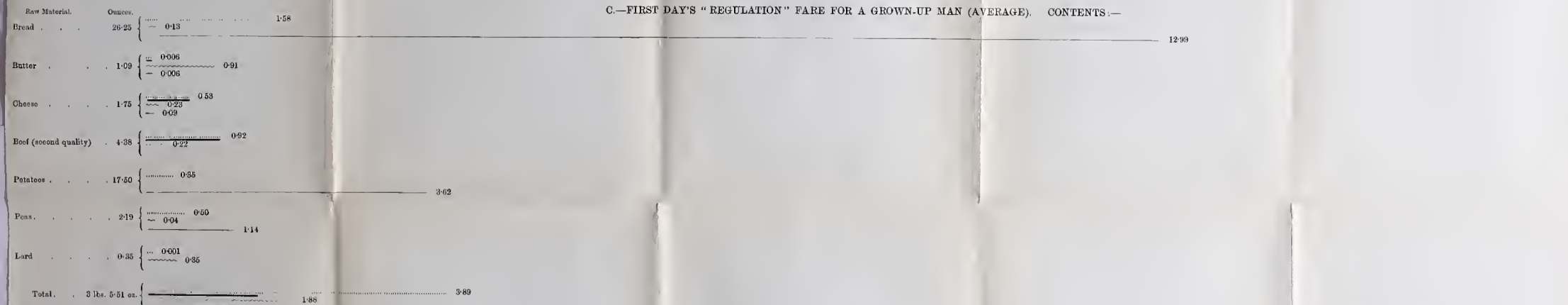
A.—THE DAILY FARE IS TO CONTAIN (according to Prof. Dr. I. Koenig's statements):—



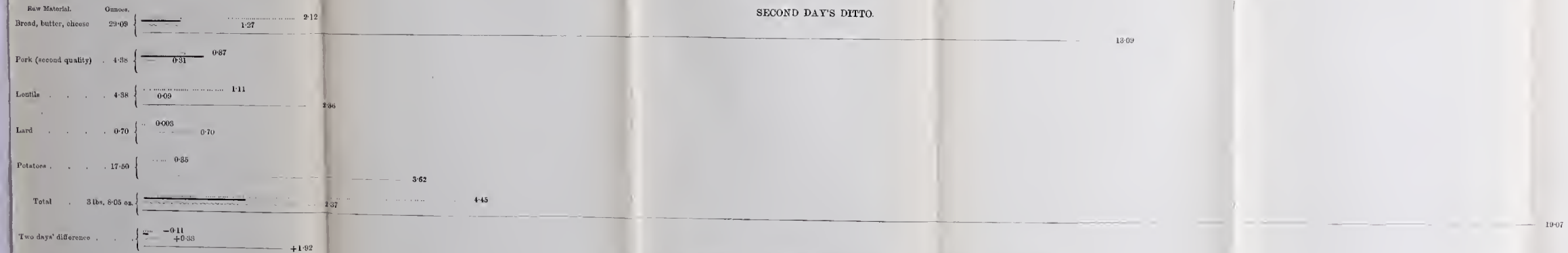
B.—ONE POUND OF RAW MATERIAL CONTAINS (according to Prof. Dr. I. Koenig's statements):—



C.—FIRST DAY'S "REGULATION" FARE FOR A GROWN-UP MAN (AVERAGE). CONTENTS:—



SECOND DAY'S DITTO.



D.—ONE DAY'S "EMERGENCY" FARE FOR A GROWN-UP MAN (AVERAGE). CONTENTS:—

